



# Synopses

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## ANZSPD Post-Graduate Essay Competition 2008 Winner

### Does ozone have a role in paediatric dentistry?

Dr Mary Apps  
University of Sydney – Doctor of Clinical Dentistry (Paediatric Dentistry) second year registrar  
Postal address: PO Box 741, Westmead, NSW 2145  
Email: apps\_mvb@yahoo.com.au



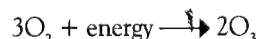
#### Introduction

There is growing interest in the use of ozone in dentistry. Anecdotally, many clinicians believe that the superiority of ozone therapy over conventional dental treatment has not yet been proven. At this time, dental applications of ozone are not included in the clinical guidelines or standards of care documents published by the various paediatric dentistry associations and academies throughout the world. The aim of this article is to provide an overview of the literature behind the dental applications of ozone, with particular focus on the potential for the incorporation of ozone therapy into the practice of paediatric dentistry.

#### Background information on ozone

Ozone is a naturally-occurring molecule comprising three oxygen atoms arranged in a cyclic structure. Ozone is a pale blue-coloured gas at room temperature and has a distinctive smell that is generally detectable by the human nose at concentrations as low as 0.02 ppm (Millar et al., 2007). Most of us associate the smell of ozone with photocopiers and laser printers.

In nature, ozone is formed in the Earth's stratosphere, where high energy radiation acts as a catalyst for its formation from molecular oxygen. Put simply, energy (either in the form of heat, ultraviolet light or high electrical voltage) is applied to an oxygen molecule. The energy splits each oxygen molecule into two individual oxygen atoms, which then react with other oxygen molecules to produce ozone molecules. The net result can be summarised as:



Ozone can be generated artificially via the same reaction. Ozone is found in ambient air and humans are continually exposed to ozone during their daily lives (Baysan et al., 2005). Ozone is produced in a series of reactions involving nitric oxide from car exhaust, sunlight and oxygen (Azarpazhooh et al., 2008). Ozone is thus a major component of photochemical smog. Occupational exposure to ozone can arise as a result of electric arc welding, laser printers and photocopiers, x-ray generators and other high-voltage electrical equipment (Baysan et al., 2005).

#### THIS ISSUE



# President's Report

Nina Vasan

We are back into another fast moving year. As I write this report the current news headlines are all regarding 'Swine Flu' or more correctly the H1N1 flu. We had some college students in Auckland returning from a trip to Mexico who were infected with the virus. All passengers of their flight were contacted and asked to stay home for the week, and start taking precautionary Tamiflu™ tablets. Our neighbours had been visiting their family in the States and returned on the same flight. Unknown to them, on the morning they arrived, they came over to our house to catch up and give the kids some gifts. They were contacted by Auckland Regional Public Health Services that afternoon and advised to stay in isolation. Fortunately they did not develop any symptoms and neither did we!

I had an enjoyable trip to Perth for the ADA Congress, which was a great success. A huge thank you must go to Peter and Sylvia Gregory who opened their home to host a fabulous Greek dinner the night before the Pre-Congress day. It was a wonderful balmy evening, and we felt a truly warm welcome to Perth.

Prior to the Congress, a Pre-congress day hosted by ANZSPD and AAPD was held the day before. I have to say, initially I was a little anxious about this day as there was some debate regarding funding issues, and the decision to have no sponsorship. The keynote speaker was Professor Francisco Ramos-Gomez from the UCSF. There were a number of local Australian and NZ, supporting speakers. The topics were interesting and Francisco's

enthusiasm was indeed contagious. My anxiety was alleviated when the feedback at the end of the day from the delegates was extremely supportive. Thank you to everyone involved in organising this day, in particular the local organising committee in Perth. Francisco then travelled to Wellington to share his knowledge at a smaller gathering of dentists and therapists. Erin Mahoney was organising this day, and I received an email from her which went something like "remind me not to organise the next one...". There is a huge amount of time and effort involved in organising these educational days, which is sacrificed from family and work time. The Society is appreciative of these efforts.

The Minimal Intervention Dentistry Society, held a one day course in Auckland. Their keynote speaker was Prof John Featherstone, who unexpectedly couldn't make the trip across due to being admitted to hospital. Fortunately, Francisco was in Wellington, and able to fly up to Auckland for the morning of the talks and fill in. Although I didn't attend, some of my colleagues said they were initially disappointed that John Featherstone wasn't present, but they were extremely impressed with Francisco and found his talks informative.

The ADA Congress followed with multiple excellent sessions, and without being biased I thought the Paedo sessions were the best!

I particularly enjoyed Professor Monty Duggal's sessions. His research team at the Leeds Dental Institute had

conducted several interesting studies. One study looked at the pulpal response in primary teeth with occlusal vs proximal caries.

Key messages were:

- Inflammation of the primary pulp always precedes the caries progression.
- When caries depth is greater than 50% of dentine the inflammation is worse for proximal caries than occlusal caries.
- He recommends not performing indirect pulp caps for large proximal carious lesions
- Pulpotomies and stainless steel crowns were discussed, with his preference for ferric sulphate for haemostatic control and MTA base for the pulpotomies. Zinc oxide and eugenol which is commonly used, may cause internal root resorption.

The next ANZSPD Conference:

The organising for the next ANZSPD Conference in Queenstown is well underway. Just to entice you all to attend, the keynote speaker is Professor John Featherstone who will not disappoint you! There are also a range of impressive supporting speakers. The dates are 28-30 March 2010. Check out the website: [www.conference.co.nz/anzspd2010](http://www.conference.co.nz/anzspd2010) for more details. For those who have never been to Queenstown, this is a fantastic time to bring the kids, do a trip around the beautiful South Island, or even pack in a tramp through the Milford Track.

Enjoy the rest of the year!

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The safe level of ozone exposure as set by the Australian National Air Quality Standards is: 0.10 ppm of ozone measured over a one hour period and 0.08 ppm of ozone measured over a four hour period (Australian Government, 2005). However, the authors of a study sponsored by the Centers for Disease Control suggested that if a safe level for ozone actually exists, it is likely to be far below the current international recommended levels (Bell et al., 2006). Gaseous pure ozone passes the mucosa of the upper respiratory tract without being absorbed and can thus reach the bronchi and alveoli directly, where its oxidatory effects cause damage to the alveoli walls and blood vessels (Stubinger et al., 2006). In polluted cities the concentration of ozone in photochemical smog can exceed the National Air Quality Standard, and has the potential to exert toxic effects (Baysan et al., 2005). The effects of short term exposures include the impairment of pulmonary function, increased frequency of asthmatic attacks, and eye irritations.

Ozone itself is not an oxygen radical, but it generates oxidants and can react to produce the hydroxyl radical, an extremely reactive species (Baysan et al., 2005). Ozone has powerful antimicrobial properties against bacteria, fungi, protozoa and viruses (Azarpazhooh et al., 2008). The oxidant activity of ozone causes the destruction of cell walls and cytoplasmic membranes of bacteria and fungi (Baysan et al., 2005). Ozone can also inhibit and block the enzymes of cells (Azarpazhooh et al., 2008). Both gaseous and dissolved (aqueous) ozone have been shown to kill a wide range of bacteria, bacterial spores and viruses (Baysan et al., 2005). Ozone has been used extensively on a worldwide basis for municipal water treatment since 1901. It has the advantage of decomposing to a harmless material (oxygen) and does not produce adverse tastes or colours. Ozone is considered to be one of the best drinking water disinfectants, capable of preventing outbreaks of pathogens such as cryptosporidium and giardia.

## The use of ozone in dentistry

Ozone was first investigated for dental applications in 1933 by a Zurich dentist named Fisch, who used ozone for the treatment of chronic periodontal infections and oral wounds (Stubinger et al., 2006b). There have been many suggested dental applications for ozone that could potentially be of use in paediatric dentistry. Proposed dental uses of ozone include: caries management, endodontic treatment, dental unit water sterilisation, and bleaching, amongst others (Stubinger et al., 2006, Baysan et al., 2005).

## Dental ozone delivery systems

The gaseous application of ozone in the maxillofacial region is particularly critical because of the possible side effects on the respiratory system. Two ozone delivery systems have been developed for dentistry: closed and open.

The closed delivery system comprises a sealed treatment area with release of a measured concentration of ozone under vacuum. The ozone is limited to the closed circuit, with no ambient ozone entering the oral cavity. The HealOzone is a closed system which has different sizes of suction caps to seal off the working area.

The second type is the open ozone delivery system, which has positive pressure delivery of ozone and requires high velocity evacuation to be used in close proximity to the site of application to limit the concentration of ozone in the oral cavity. The Ozi-cure system is an example of an open delivery system.

A simple way to test if a delivery system is working is to apply the delivery tip to a latex glove for five seconds – if ozone is being generated the glove will disintegrate.

A recent study compared the safety of the HealOzone and Ozi-cure systems (Millar et al., 2007). The Ozi-cure device, when used without adequate suction, was found to allow ozone concentrations in the patient's oral and nasal cavities and pharynx to exceed permitted levels. The authors concluded that the Ozi-cure system should not be used.

## Dental unit water systems

Dental unit water systems (DUWS) provide an environment which can harbour complex multispecies biofilms. Ozone has been used for the treatment of dental unit water systems since the 1990s (Baysan et al., 2005). Some studies have apparently shown that the antimicrobial effect of ozone on DUWS is longer-lasting than that of conventional agents such as hydrogen peroxide (Baysan et al., 2005). However, other studies have found the performance of ozone to be inferior to that of hydroxide-containing products in the reduction of biofilm coverage and elimination of viable bacteria from DUWS (Walker et al., 2003). At this stage there is conflicting evidence on the antimicrobial effect of ozone when used to clean DUWS.

## Caries

It has been suggested that delivering ozone into a carious lesion will reduce the number of cariogenic bacteria. Ozone can also break down pyruvic acid to acetic acid. Essentially, the theory is that ozone diminishes the microflora in a lesion and increases the lesional pH, thereby tipping the balance towards remineralisation. Thus ozone could possibly arrest the progress of the carious lesion and may, in the presence of fluoride, allow remineralisation to occur. This may either delay or prevent the need for traditional dental restorative treatment (Azarpazhooh et al., 2008, Rickard et al., 2004). [The complete HealOzone procedure involves the direct application of ozone gas to the caries lesion on the tooth surface, the use of a remineralising solution immediately after application of ozone and the supply of a 'patient kit', which consists of toothpaste, oral rinse and oral spray all containing fluoride (Brazzelli et al., 2006).]

Both the Cochrane review on ozone (Rickard et al., 2004) and the appraisal by the National Institute for Health and Clinical Excellence (NICE, 2005) concluded that evidence of efficacy was lacking at the time they did their assessment. However, further research has been completed since the publication of these documents and

some of the results indicate promise for the treatment of caries with ozone. One of the main problems in evaluating the efficacy for the use of ozone for treatment of caries has been shortcomings in study design. In particular, studies into ozone and caries have frequently completed data analysis at the level of the lesion, which is not independent of the person, ignoring the clustering of multiple carious lesions within study participants. That is to say, the teeth have been analysed independently as if they were all from different subjects, an approach which has been shown to lack validity (Azarpazhooh et al., 2008). This method of data analysis has also meant that subsequent researchers have not been able to pool data from multiple studies for further statistical analysis (Rickard et al., 2004). Another barrier to the analysis of data from multiple studies has been the lack of consistency between the outcome measures used. In addition to this, many studies have not reported on important methodological aspects, such as allocation concealment and examiner blinding procedures, suggesting a high risk of bias (Brazzelli et al., 2006, Rickard et al., 2004).

A methodological concern with this area of research relates to outcome measurement. The majority of clinical studies into ozone and caries have used laser fluorescence (DIAGNOdent) readings and electric caries metre (ECM) scores. Although these devices have undergone extensive testing, most dentists would probably agree that neither DIAGNOdent or ECM have replaced visual, tactile and radiographic detection as a routine method of caries diagnosis/monitoring (Azarpazhooh et al., 2008). [Interestingly, one study reported that the use of ozone resulted in an average reduction of DIAGNOdent score of 13% immediately after ozone treatment (Dahnhardt et al., 2006).] The clinical severity score (hard, leathery or soft) used in many studies as an indicator of tactile hardness of a lesion is subjective and could result in some level of measurement error too. Clearly, inherent difficulties arise in any area of research that requires the measurement of caries progression/arrest.

Ozone application has been trialled in the management of three main categories of carious lesions: (1) incipient caries, (2) cavitated single-surface lesions, and (3) primary root carious lesions. Ozone has not been tested on interproximal carious lesions as these do not allow for the adequate sealing of the suction cap necessary for ozone application. Some impressive results have been reported on the use of ozone to arrest root caries, but this area of research will not be further discussed here as it is more pertinent to geriodontology than to the practice of paediatric dentistry.

### Incipient caries

Baysan and Beighton investigated the effect of ozone application on the bacterial counts of non-cavitated occlusal carious lesions in vitro. Forty second application of ozone gas to non-cavitated occlusal lesions failed to significantly reduce the numbers of viable bacteria in infected dentine beneath the demineralised enamel. (Baysan and Beighton, 2007)

Abu-Naba'a et al. conducted a split-mouth randomised clinical trial with 90 participants, each of whom had at least two permanent posterior teeth with non-cavitated pit/fissure caries. A total of 390 teeth were involved in this study – half of these teeth were used as controls and the other half received a 10 second application of ozone gas. In addition to this, some teeth from the control group and teeth from the ozone group received a resin fissure sealant. Readings were made at baseline and at 1, 3, 6, 9 and 12 months. The unsealed teeth were all checked with clinical severity scores, DIAGNOdent and ECM, whereas, the sealed teeth only had the quality of the sealant checked. No radiographs were taken as part of the study. There was no statistical difference in the retention of the sealants. For the unsealed teeth, the recorded values for the control teeth were higher (i.e. worse) at the recall appointments than those of the ozone group, but this was not statistically significant (Abu-Naba'a et al., 2003, Azarpazhooh et al., 2008).

Huth et al. ran a split mouth clinical trial to assess the effect of a single 40 second application of gaseous ozone on non-cavitated fissure caries in permanent molars. Forty-one patients with 57 pairs of lesions were recruited. No remineralisation solutions were used in this study. The lesions were monitored with DIAGNOdent for a short period of time, up to 3 months in total. The ozone-treated teeth in patients deemed to be at high current caries risk showed either statistically significant caries reversal or reduced caries progression when compared to the untreated control lesions in these same patients. However, there was no statistically significant difference between the DIAGNOdent readings of the control and test lesions when the whole study population was considered.

### Cavitated carious lesions

Dahnhardt et al. completed a controlled clinical study to (1) determine whether the treatment of dental caries with ozone was well-tolerated by apprehensive children, and to (2) ascertain whether ozone reverses caries in open single-surface lesions. The 28 children in the sample were judged by the referring dentist as being un-treatable in the dental chair due to anxiety. The study population contained 82 carious lesions, and for each child in which a lesion was treated with ozone, a control lesion was left untreated. Tactile hardness and DIAGNOdent values were assessed and the values in the test lesion were compared with the values in the control lesion after 2, 4, 6, and 8 months. The authors reported that 94% percent of the children were treatable and the vast majority "lost their dental anxiety". The hardness values improved significantly in the ozone-treated test lesions after 4, 6, and 8 months compared with the baseline reading, while the control lesions had no significant change in hardness at any of the recall intervals. No statistically significant changes were noted in the DIAGNOdent values of the teeth. (Dahnhardt et al., 2006)

### Removable appliances

The wearing of removable dentures is not as common in the paediatric

population, but there is certainly widespread use of acrylic removable orthodontic appliances. Ozone has been suggested as a disinfectant for acrylic and metal appliances, particularly because of its strong deodorizing power. Arita et al. (2005) found no significant differences in the antimicrobial activity of ozonated water and commercially available denture cleaners (Arita et al., 2005). Oizumi et al. found that gaseous ozone was a more effective microbicide than ozonated water, and suggested that direct exposure to gaseous ozone could be useful for disinfection of dentures (Oizumi et al., 1998).

### Bonding strength of restorative materials

As ozone has been suggested for use as a cavity preparation disinfectant, an important consideration is whether the application of ozone affects the bonding strength achieved by restorative materials. An *in vitro* study by Al Shamsi et al (2008) reported no adverse effect on the bond strength of orthodontic brackets after pre-treatment of enamel with ozone.

Schmidlin et al. found that gaseous ozone application had no effect on the shear bond strength of composite resin to bovine enamel and dentine samples (Schmidlin et al., 2005). Celiberti et al. (2006) evaluated the effect of ozone application on the quality of resin sealants placed on prepared and sound molar fissures *in vitro* and also reported that no statistically significant difference was observed between the control and ozone treated samples in all tests.

However, Onisor et al. found that surface treatment with ozone may significantly decrease marginal quality of class V resin restorations in dentine without negatively influencing marginal quality in enamel (Onisor et al., 2007).

Bitter et al. investigated the bond strength of fibre posts after the application of gaseous ozone to the root canal dentine. Adhesion of the self-adhesive resin cement RelyX Unicem was significantly reduced after gaseous ozone application (Bitter et al., 2008).

However, pre-treatment with ozone did not affect the adhesion of the other bonding systems tested.

### Periodontics and oral medicine/oral surgery

It has been suggested that the antimicrobial properties of ozone and reported stimulation of the host defence system potentially make ozone a therapeutic agent for the treatment of gingivitis and periodontitis (Stubinger et al., 2006a). The results of *in vitro* studies suggest that aqueous ozone may actually have an anti-inflammatory capacity, showing decreased inflammatory cytokine expression at the cell level (Huth et al., 2007). When tested on human oral epithelial cells and gingival fibroblast cells, aqueous ozone was more biocompatible than antiseptics such as chlorhexidine, hydrogen peroxide and sodium hypochlorite (Huth et al., 2006). Non-isotonic ozone water has been shown to not have any negative effects on the root surface at an exposure time of less than 2 minutes, which means that there may be promise in its application for root surface irrigation prior to replantation of avulsed teeth or during tooth transplantation procedures (Stubinger et al., 2006).

Some authors have suggested that ozone can have a positive effect on oral soft tissue healing, and that it actually has a therapeutic effect in addition to a microbiologic effect (Stubinger et al., 2006). Ozone is said to facilitate oxygen release from erythrocytes into tissues. Another article (published only in German) apparently reported accelerated healing after dental surgical procedures and extraction of teeth with the application of aqueous ozone (Stubinger et al., 2006). Gaseous ozone has been applied to intraoral wounds of radiotherapy patients using custom-made suction caps and a closed delivery system. Some patients have reported that ozone has a pain-alleviating effect, but it is difficult to interpret the results of such studies because of the drug regimens that were present at the same time as ozone therapy was being conducted. There have not been any studies conducted with ozone application for oral mucositis

in paediatric oncology patients. As many of these children are quite young, it seems unlikely that the regimens tested in adult populations would be tolerated by this population (i.e. daily 15 minute applications of gaseous ozone via suction caps). At this stage the literature contains mixed results in relation to application of ozone for soft tissue wound healing and no conclusions can be drawn as to its effectiveness.

### Endodontics

The need for endodontic treatment of traumatised teeth in children, including teeth with open apices, does mean that a highly biocompatible endodontic irrigant would be of great interest in paediatric dentistry. However, conflicting results have been reported on the antimicrobial activity of ozone in the root canal system. Nagayoshi (2004) found that ozonated water was inferior to 2.5% sodium hypochlorite in antimicrobial action against *enterococcus faecalis* and *streptococcus mutans* in bovine dentin *in vitro* (Nagayoshi et al., 2004). Cardoso et al. reported that ozonated water did not neutralize endotoxin, but was reported to be effective against *candida albicans* and *enterococcus faecalis* in the root canal system (Cardoso et al., 2008). However, Estrela et al. (2007) reported that application of either ozonated water or gaseous ozone did not inactivate *enterococcus faecalis* (Estrela et al., 2007). At this time there is insufficient evidence to support the use of ozone in endodontic treatment.

### Bleaching

Ozone has been suggested as having applications in tooth bleaching. Industrial uses of ozone include bleaching of paper pulp, flour, starch and sugar (Azarpazhooh et al., 2008). However, there is no published evidence of bleaching efficacy of teeth by ozone. Manton et al. found the application of ozone with carbamide peroxide solution did not significantly affect bleaching effectiveness compared with peroxide alone. In fact, the application of ozone prior to carbamide peroxide bleaching significantly decreased bleaching effectiveness (Manton et al., 2008).



## Conclusion

Although some of the reported results are promising, more research is needed to evaluate the effectiveness of ozone in dental applications. This area of discussion not only relates to the technology of ozone specifically, but is also a reflection of the importance that the dental profession now places on evidence-based research and practice (Cronshaw, 2006). The hesitation of the dental profession to adopt this new modality demonstrates the increasing importance of evidence base in determining changes in dental techniques. The use of ozone does show promise for use in paediatric dentistry. The non-invasive and easily-tolerated application procedure and the emphasis on preservation of tooth structure are two key qualities of ozone therapy which make it particularly of interest for use in children. However, further well-designed studies are required to further elucidate the efficacy of ozone as a treatment modality in paediatric dentistry.

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# Paediatric Dentistry 4th Year ANZSPD Essay Winner 2008

“Discuss the contemporary management of luxation injuries in permanent teeth, with specific reference to new evidence in the last decade”

Sigourney Henneker  
University of Western Australia, Perth

## Introduction

Dental traumatic injuries are common amongst the population, with some authors approximating that half of the population will experience some form of dental trauma by age fourteen<sup>1</sup>. Avulsion and luxation injuries account for approximately 16% of all traumatic injuries to the permanent dentition, with maxillary incisor teeth most frequently affected<sup>2-5</sup>. This is of particular significance to dental practitioners, who must have a sound knowledge of current management protocol to ensure optimal care in an emergency situation.

Dental luxation is defined as the dislocation or displacement of a tooth from the alveolar socket<sup>6</sup>. Luxation injuries can be classified based on the direction and degree of displacement into: extrusive luxation, intrusive luxation, lateral luxation and avulsion. Concussion and subluxation injuries are frequently classified as luxation injuries<sup>5,7</sup>. However, while these injuries do involve damage to the periodontal ligament (PDL) and tissues, in both cases the tooth is not displaced from the socket and hence do not fit the definition of true luxation. The management of concussion and subluxation will not be discussed in this paper<sup>7</sup>. The World Health Organisation (WHO) classification and definition of injuries to the periodontal tissues is outlined in **Table 1**<sup>5,8,9</sup>.

In recent years, there has been a move towards evidence-based dentistry where relevant scientific evidence is integrated into the clinical decision making process, providing a basis for patient care and treatment<sup>10</sup>. This has particular significance in the area of dental trauma, where research has

provided a valuable foundation for management recommendations, aimed at ensuring ‘best practice’ and optimal treatment outcomes<sup>11</sup>.

In addition, there has been a shift towards a more conservative approach when managing dental trauma with the development of technology and increased understanding of the pathogenesis of dental traumatic injuries<sup>12</sup>.

This paper will discuss the general management principles of traumatic dental injuries, with a focus on the contemporary management of specific types of luxation injuries. Current evidence supporting management recommendations will be presented. Management of maxillofacial trauma, apart from alveolar process fractures associated with certain luxation injuries, is beyond the scope of this paper. In addition, discussion of the management of soft tissue trauma will be restricted to that required in the treatment of luxation injuries.

## General Management Principles

Basic principles for managing luxation injuries include history taking,

examination and diagnosis of the injury; repositioning of the displaced tooth and alveolar bone; splinting; antibiotic therapy; endodontic therapy; review and follow-up. The application of these principles can vary significantly depending on the type of luxation injury. A brief overview of the principles and the evidence behind management will be presented, followed by discussion of management for specific injuries.

As with all areas of dental practice, a thorough history and examination is essential in the management of dental traumatic injuries to ensure correct diagnosis and optimal patient care. The history should include a medical and drug history as well as a history of the presenting injury. It is particularly important to establish from the patient or attendant how, when and where the injury occurred and any first aid treatment provided as these factors can significantly affect the prognosis and management of the presenting injury. The dentist should also ask about previous dental injuries which could affect examination and test findings.

The examination should not focus solely on the teeth and mouth. The dentist must carefully assess the patient for any other signs of injury such as

**Table 1: Classification of Injuries to the Periodontal Tissues based on the WHO System<sup>9</sup>**

Injury	Definition
Concussion	No abnormal loosening or displacement of the tooth from the alveolar socket but marked reaction to percussion
Subluxation	Abnormal loosening of the tooth without displacement from the alveolar socket
Extrusive luxation	Partial displacement of a tooth from the alveolar socket
Intrusive luxation	Displacement of a tooth into alveolar bone, with comminution or fracture of alveolar socket
Lateral luxation	Displacement of tooth other than axially, with comminution or fracture of alveolar socket
Avulsion	Complete displacement of tooth from alveolar socket

concussion, amnesia, headache or vomiting that may require referral to a medical practitioner or hospital<sup>8</sup>. A thorough intra and extra-oral examination should be completed as well as a radiographic examination. Current guidelines suggest that a minimum of three radiographic views be taken consisting of projections at a 90 degree horizontal angle to the tooth, an occlusal view and a lateral view from the mesial or distal aspect of the tooth<sup>7,13</sup>. The intra-oral examination should include mobility, percussion (a high metallic tone is considered pathognomonic for intrusion or lateral luxation) and sensibility testing of the tooth, ideally using an electric pulp tester<sup>5,8</sup>. However, pulp sensibility testing immediately following trauma can be unreliable, with negative responses often reflecting transient nerve damage<sup>8</sup>. More detail on examination procedures can be found in current textbooks on the subject<sup>5</sup>.

A basic principle of dental trauma management is the repositioning and fixation of hard and soft tissues<sup>5</sup>. Based on current evidence, prompt repositioning of luxated tissues is recommended, with delays in treatment thought to adversely affect prognosis<sup>14,15</sup>. Timing has been found to be particularly significant in the management of avulsion injuries<sup>13,16-18</sup>. Fractures of the alveolar bone should be reduced and soft tissues sutured into position. The use of a splint following dental trauma is generally recommended to stabilise traumatised teeth and support periodontal healing<sup>2,11,19</sup>. Current guidelines recommend the use of a "functional" splint which allows for physiological movement of

the root<sup>7,13</sup>. Studies have suggested that normal, functional loading can decrease the risk of ankylosis following trauma<sup>11</sup>. Previous studies have also suggested that prolonged periods of splinting can worsen the prognosis for luxated teeth<sup>11</sup>. However, a recent study investigating the influence of treatment factors on intruded teeth found no significant difference between the type of splint used and the duration of splinting<sup>20</sup>. This is supported by a recent review on dental trauma splints by Kahler and Heithersay<sup>11</sup>. It is currently recommended that splinting time be kept to a minimum, generally for 1-2 weeks following luxation injuries<sup>7,11,13,19</sup>. Several authors cite medico-legal considerations as a basis for splinting, to prevent displacement during periodontal healing, aspiration or swallowing<sup>11,19</sup>. **Table 2** outlines the most recent recommendations from the International Association of Dental Traumatology (IADT) on splinting duration. With regards to the type of splint used, new evidence suggests that wire-composite splints and the newly developed titanium trauma splints (TTS) are most acceptable to patients<sup>21</sup>. With any splint used it is essential that oral hygiene is not compromised by its placement.

The provision of adequate post-operative instructions to the patient or guardian is an important management consideration. The patient or parent should be instructed on how to maintain oral hygiene in the traumatised area. The need for adequate removal of plaque from the traumatised area is emphasised in current guidelines due to the deleterious effects of plaque on

healing<sup>7</sup>. The use of a chlorhexidine mouthwash and a soft diet is also recommended<sup>7</sup>. Administration of systemic antibiotic therapy or referral for tetanus immunisation should be provided where indicated. The importance of regular reviews should also be explained to the patient.

Some authors recommend the use of antibiotics for all luxation injuries<sup>8</sup>. However, Andreasen argues that systemic antibiotics are of little use following luxation injuries due to reduced blood flow to the pulp and periodontium<sup>5</sup>. Current IADT guidelines recommend the use of antibiotics only when there is a risk of contamination, such as following avulsion<sup>13</sup>.

Regular review of patients following traumatic dental injury is strongly recommended in the literature<sup>22</sup>. Common complications following luxation injuries include pulp necrosis, pulp canal calcification, root resorption and ankylosis. These complications can occur rapidly, within months of injury, or take years to develop<sup>22</sup>. Hence frequent and long-term follow up is essential following luxation injuries. Current IADT guidelines for follow-up of avulsion are outlined in **Table 3**. Postponement of endodontic therapy until additional signs of pulpal pathosis develop is recommended for all luxation injuries except intrusion, based on current evidence<sup>20,22</sup>. Endodontic treatment required in the case of pulpal necrosis is dependant on the stage of root development<sup>22</sup>. In mature teeth that develop pulp necrosis, conventional endodontic therapy

**Table 2: Current guidelines for splinting of luxated permanent teeth. Adapted from IADT 2007 Guidelines<sup>7</sup>**

Type of Injury	Splinting Time
Avulsion	2 weeks
Extrusive Luxation	2 weeks
Lateral Luxation	4 weeks

**Table 3: Follow-up procedures for luxated permanent teeth. Based on IADT 2007 Guidelines<sup>7,13</sup>**

Time	<2 weeks	4 weeks	6-8 weeks	6 months	1 year	Annually for 5 years
Extrusive Luxation	S + C	C	C	C	C	C
Lateral Luxation	C	S	C	C	C	C
Intrusive Luxation	C		C	C	C	C
Avulsion	S + C	C	C	C	C	C

S = Splint removal; C = clinical and radiographic examination



should be completed<sup>23</sup>. For immature teeth that develop pulp necrosis, endodontic apexification procedures are recommended, with pulp extirpation and long term Calcium hydroxide dressings used to encourage formation of a hard tissue barrier<sup>23,24</sup>. However, new evidence suggests that use of Mineral Trioxide Aggregate (MTA) in teeth with necrotic pulps and open apices may be a valid treatment option, with the advantage of shorter treatment duration<sup>22,24,25</sup>.

### Management of Extrusive Luxation

Extruded teeth present clinically as elongated teeth with increased mobility<sup>14</sup>. Radiographically, increased PDL space is seen apically<sup>7</sup>. The management of extrusive luxation follows the basic principles outlined above. Following the clinical examination, extruded teeth should be repositioned using slow and steady apical pressure to displace the coagulum<sup>14</sup>. Local anaesthetic is not generally recommended for repositioning<sup>5</sup>. Current guidelines recommend a functional splint (e.g. wire-composite splint or TTS) be placed for approximately 2 weeks<sup>7</sup>. Bone fractures are not commonly associated with this type of injury and hence a shorter splinting time is recommended compared to lateral luxation injuries<sup>14</sup>. Any concurrent injuries to the oral soft tissues should be repositioned and sutured.

Following extrusive luxation, pulpal status should be reviewed regularly. Current statistics have found the incidence of pulp necrosis following extrusion to be 43%, most frequently occurring within one year of injury and in mature teeth<sup>23</sup>. Pulp canal obliteration was observed in 35% of cases<sup>23</sup>. The overall prognosis for extruded teeth depends primarily on the stage of root development and degree of injury or displacement<sup>15</sup>. A recent study of extruded permanent teeth in a paediatric population found that survival of extruded teeth was not significantly different to that for avulsed teeth<sup>23</sup>. The same study found current treatment methods for extrusion to be adequate based on favourable rates of tooth survival over an 8-year period<sup>23</sup>.

### Management of Lateral Luxation

Laterally luxated teeth generally present clinically with the crown displaced in a palatal or labial direction<sup>7</sup>. As with all luxation injuries, upper anterior teeth are most commonly involved. The tooth is immobile and percussion will frequently result in a "high, metallic (ankylosed) sound"<sup>7</sup>. Increased PDL space is generally seen on occlusal radiographs. Due to the direction of displacement, injury and fracture of the labial or palatal alveolar plate commonly occurs<sup>14</sup>.

As with other luxation injuries, the principles of atraumatic repositioning and fixation of the tooth to prevent excessive movement during healing should be followed. Any fracture of the alveolar socket must be reduced and the tooth may require extrusion with forceps to disengage it from its bony lock<sup>14,26</sup>. The alveolar bone should be compressed using finger pressure following repositioning and soft tissues should also be repositioned and sutured<sup>27</sup>. Anaesthesia is recommended for these procedures<sup>14</sup>. Following reduction, a functional splint should be applied for 3-4 weeks and a radiograph taken to confirm correct positioning<sup>7</sup>. This longer splinting duration is recommended due to the presence of concurrent bone fracture. At review appointments, temporary marginal breakdown of the periodontium may be seen radiographically, in which splinting for a further 6-8 weeks is recommended<sup>14,26</sup>.

The role of antibiotic therapy in managing lateral luxation injuries is controversial. Some authors report that antibiotics may be beneficial in promoting repair of the PDL, while having no effect on pulpal prognosis<sup>8</sup>. However, the administration of systemic antibiotics for lateral luxation injuries is not generally recommended<sup>7,14,26,27</sup>. As with other luxation injuries post-operative instruction regarding oral hygiene, a soft diet, use of chlorhexidine and follow-up appointments should be provided.

A recent study by Nikoui et al. reported survival and pathological outcomes for

laterally luxated teeth to be far better than those for other displacement injuries<sup>28</sup>. They found common complications following lateral luxation injury to be pulp necrosis (40%) and pulp canal obliteration (40%)<sup>28</sup>. In contrast, ankylosis and infraocclusion were not expected complications due to the low incidence of external root resorption<sup>28</sup>. Based on this evidence clinical vigilance and regular review examinations are advised. Current review recommendations are outlined in **Table 3**. If pulpal necrosis develops, conventional endodontic therapy or apexification procedures should be initiated as previously discussed.

### Management of Intrusive Luxation

Intruded teeth clinically present axially displaced and immobile, with a metallic (ankylosed) sound on percussion<sup>7</sup>. Intruded teeth have a poor prognosis and hence treatment is generally aimed at minimising the risk of inflammatory or external replacement root resorption and ankylosis<sup>14</sup>. Both management and prognosis are significantly affected by the stage of root development, with immature teeth having a better prognosis<sup>14,17,20</sup>. The treatment options for intruded teeth consist of immediate surgical repositioning or delayed repositioning via spontaneous re-eruption or orthodontic extrusion<sup>15</sup>. New evidence has found that unlike other luxation injuries, a delay in examining and repositioning of intruded teeth did not significantly affect prognosis<sup>20</sup>.

The latest IADT guidelines recommend allowing for spontaneous repositioning of teeth with incomplete root development and rapid orthodontic extrusion if this has not occurred after three weeks<sup>7</sup>. In teeth with completed root development prompt orthodontic or surgical repositioning is recommended and endodontic treatment initiated within 7-10 days<sup>7</sup>. Based on evidence of pulpal necrosis occurring in approximately 100% of cases with mature apices, prophylactic pulp extirpation is recommended<sup>14</sup>. For immature teeth, apexification procedures need to be completed prior to obturation<sup>24</sup>.

A recent study into intrusion of permanent teeth by Andreasen et al. has found new evidence that non-repositioned teeth have a better prognosis and superior healing<sup>20</sup>. The same study found no significant difference in healing between orthodontic and surgical repositioning making the surgical option preferable as less time required<sup>20</sup>. Slightly better healing was also found with complete repositioning, in contrast to previous recommendations that total surgical repositioning at time of injury be avoided due to frequent loss of marginal bone and ankylosis<sup>14,20</sup>. Based on this evidence the study recommended awaiting spontaneous eruption in patients up to 17 years of age<sup>20</sup>. With regards to splinting, the type and duration of splinting was found to have no effect on treatment outcome<sup>20</sup>.

The role of systemic antibiotics in the management of intrusion is debatable. It can be argued that the plaque on intruded teeth can be a potential source of infection. However, Andreasen et al. found no significant difference in healing following intrusion with the use of penicillin type antibiotics<sup>20</sup>. The role of tetracycline antibiotics in intrusion management is unclear.

The principles of review and follow-up are particularly important following intrusion injuries which have the worst prognosis of all traumatic injuries to the permanent dentition<sup>3</sup>. Pulpal and periapical complications can present up to ten years after the initial injury, hence long term follow up is important<sup>14</sup>.

## Management of Avulsion

Avulsion is one of the most serious traumatic dental injuries, resulting in significant damage to the periodontal tissues<sup>13</sup>. Treatment options following avulsion consist of immediate replantation, delayed replantation or no replantation. The choice of treatment depends upon the storage media and length of extra-alveolar storage period, which has been shown to significantly effect the overall prognosis of the tooth<sup>15</sup>. Since treatment is aimed at optimising the healing of the PDL

and pulp, immediate management should attempt to minimise extra-oral time, ensure extra-alveolar storage in a physiologic medium and minimise, eliminate or control with antibiotics contamination of the tooth<sup>14</sup>. Management should be aimed at preventing the complications of root resorption<sup>1</sup>.

Immediate replantation is strongly recommended following avulsion of a permanent tooth, despite the stage of root development<sup>13,16,17</sup>. Contraindications for replantation include the presence of gross caries, periodontal disease or non-physiological storage of the tooth<sup>14</sup>. If difficulty is encountered when replanting, fracture of the alveolar process should be considered and the socket wall repositioned if necessary<sup>14</sup>. If the tooth has been replanted prior to presentation at the dental clinic then the area should be rinsed with saline or chlorhexidine, examined and managed following standard post-trauma protocol<sup>29</sup>. No attempt should be made to extract the tooth<sup>13</sup>.

Cleansing procedures prior to implantation can influence healing of the PDL<sup>5</sup>. If the tooth surface is contaminated the surface should be rinsed with saline prior to implantation to remove foreign bodies and bacteria which can stimulate an inflammatory response<sup>18</sup>. The socket should also be rinsed with saline to remove the blood clot. Presence of coagulum in the socket can enhance ankylosis<sup>14</sup>. If delayed replantation is unavoidable, the tooth should be stored wet, in a physiological medium such as isotonic saline, saliva or milk<sup>13</sup>. Dry storage and storage in non-physiological solutions such as water, sterilising agents or alcohol have been shown to have detrimental effects on pulpal and periodontal healing, with a high risk of root resorption<sup>16,17</sup>.

Studies have shown that pulpal revascularisation is possible in teeth with an apical foramen greater than one millimetre in diameter<sup>14</sup>. Hence, endodontic therapy should not be initiated on immature teeth unless extra-alveolar dry storage exceeds one hour<sup>13</sup>. Teeth with complete root

development (apical foramen less than one millimetre in diameter) should undergo pulp extirpation and root canal dressing with calcium hydroxide prior to splint removal<sup>13,15</sup>. Pulp survival in such teeth approximates zero, hence management is aimed at preventing root resorption and periapical pathosis<sup>1</sup>. For all teeth with a dry storage time of greater than one hour, periodontal healing is not expected and endodontic treatment is recommended due to the poor long-term prognosis<sup>13</sup>. Current guidelines suggest that endodontic treatment may be completed extra-orally and the tooth immersed in sodium fluoride for twenty minutes prior to replantation<sup>13</sup>.

Splinting with a functional splint is recommended, with removal after approximately seven days to reduce the risk of ankylosis<sup>11</sup>. Following splint application, correct repositioning of the teeth should be verified radiographically<sup>1,14</sup>.

Due to the risk of contamination stimulating inflammatory root resorption, the administration of systemic antibiotics is recommended following avulsion<sup>13</sup>. Tetracycline has been shown to have additional benefits to penicillin antibiotics in reducing root resorption by altering osteoclast and collagenase activity<sup>18</sup>. Hence use of tetracycline should be considered for patients where risk of staining is low<sup>18</sup>. The patient's tetanus immunisation status should be assessed and referral to a medical practitioner for a tetanus booster arranged if necessary<sup>18</sup>. As for all luxation injuries, post-operative instructions should be provided to the patient or parent.

Due to the limited prognosis of avulsed teeth and the high incidence of complications, review of cases is essential<sup>14</sup>. Replanted teeth should be monitored at regular intervals with thorough radiographic follow-up to detect any signs of pulpal pathosis or root resorption. Current guidelines for follow-up are outlined in *Table 3*.

## Conclusion

As with all areas of dental practice, management of dental trauma should be based on sound, scientific evidence to ensure optimal treatment outcome. It is therefore imperative that the dental practitioner is aware of new evidence and recommendations and is able to integrate this knowledge into their clinical practice.

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# Have you thought about joining IADT?

EMAIL TO: DR RICHARD A. JMER, THE AUSTRALIAN AND NEW ZEALAND SOCIETY OF PEDIATRIC DENTISTRY  
FROM: ALEX MOULE, DIRECTOR OF IADT

As we discussed recently, please find enclosed contact information on The International Association of Dental Traumatology.

The IADT is a multidisciplinary world wide organization dedicated to The treatment of dental trauma. I have found it to be an extremely worthwhile association to belong to. The Journal is now world class and the conferences worth going to. The next international conference is in Verona, Italy in June 2010. The membership registration fee is low. The Association would welcome applications from your Society for membership.

Dear Colleague,

Please accept an invitation to become a member of the International Association of Dental Traumatology (IADT). Membership in the Association will enable you to be updated regularly on advances in dental traumatology.

The IADT is dedicated to the study of all aspects dental and orofacial trauma. It has several hundred members worldwide, representing over 40 countries. Treatment of dental trauma requires a team approach. Thus, the IADT is a true multidisciplinary association. Members include general practitioners and specialists from all dental disciplines.

The Association is governed by a Board of Directors, which includes many of the well known names in the dental traumatology literature:

President:	Dr. Asgeir Sigurdsson (Iceland)
Secretary/Treasurer:	Dr. Lars Andersson (Kuwait)
President Elect:	Dr. Mitsuhiro Tsukiboshi (Japan)
Past President:	Dr. Marie Therese Flores (Chile)
Executive Director:	Dr Leif K. Bakland (USA)
Directors:	Dr. Jens Ove Andreasen (Denmark), Dr. Cecilia Bourguignon (France), Dr. Anthony J. DiAngelis (USA), Dr. Lamar Hicks (USA), Dr. David Kenny (Canada), Dr. Antonio Renato Lenzi (Brazil), Dr. Barbro Malmgren (Sweden), Dr. Alex J. Moule (Australia), Dr. Silvia Pizzi (Italy), Dr. Martin Trope (USA).

The Association publishes the Journal of Dental Traumatology, which provides research papers, case reports and fresh information about the diagnosis and treatment of dental injuries. With full membership you receive the hard copy of the Journal, and also access to the electronic versions going back many years. This excellent publication will keep you up to date with developments in the treatment of your traumatized patients.

The association regularly hosts an outstanding World Congresses on Dental Traumatology. 2008 saw a tremendously successful congress held in Nagoya, Japan, which attracted over 600 registrants from 44 different countries. The next World Congress on Dental Traumatology will be held in Verona, Italy. Members receive a reduction in congress fees.

Under the direction of Dr. Flores, the IADT has recently published Trauma Guidelines covering the treatment of trauma to of both primary and permanent teeth. They are posted on the IADT website and have been published in Dental Traumatology (2007; 23:66-71, 130-136).

Members have access to a member page on the IADT website <http://www.iadt-dentaltrauma.org>. Soon the website will host a forum where members can request help with the treatment of patients with particular dental traumatic injuries. Soon, members will also be able to have access to a Trauma Pathfinder being developed by Dr. Jens Andreasen. The Pathfinder will help identify the best evidence based management of traumatic dental injuries.

Membership fees are very reasonable. Full membership, which includes the Journal is only US\$160, with student membership and non subscription membership being US\$35 and US\$70 respectively. The attached application for membership can be faxed or posted to the Executive Director.

I hope you will favourably consider joining this progressive association and enjoy the benefits of membership.

With kind regards,

**Leif K Bakland**  
Executive Director IADT

# Dental Volunteers for Israel

Dental Volunteers for Israel (DVI) offers licensed dentists volunteer opportunities in Jerusalem to treat underprivileged children (ages 5 – 18).

The children are referred to The Trudi Birger Dental Clinic through Jerusalem's welfare agencies. They are the clinic's only patients. This humanitarian project helps needy children regardless of religious, ethnic or national affiliation.

Dental Volunteers for Israel (DVI) is a free-dental clinic, relaying solely on the donated services of dentists who are willing to spend between one to four weeks in Jerusalem to bless the lives of poor Israeli and Palestinian children. Apartment provided at no cost. Clinic is state of the art. Dentists work four days a week 8:00 am – 2:00 pm. Adequate time available for seeing the city and touring country. This is a great service opportunity to help disadvantaged children and learn more about the Holy Land. We invite all dentists interested in volunteering to contact us to receive more information.

## Contact

Dental Volunteers for Israel

Tel: 011-972-2-6783101

Fax: 011-972-2-6784737

29 Mekor Chaim Street

Jerusalem, 93465, Israel

Email: [international@dental-dvi.org.il](mailto:international@dental-dvi.org.il); [debbie@dental-dvi.org.il](mailto:debbie@dental-dvi.org.il)

[www.dental-dvi.co.il](http://www.dental-dvi.co.il)



# News from Cambodia

Callum Durward  
Paediatric Dentist, Phnom Penh, Cambodia

Two NZ dentists who have been members of the ANZSPD are currently working in Cambodia. I have been living here for the last 2.5 years, and Antonia Moa for the past 6 months. Antonia worked in Vietnam for 3 years before shifting to Cambodia. There have been several projects set up to help improve child oral health in recent years, including two Diploma courses in paediatric dentistry for Cambodian dentists. This report outlines several of the more recent developments

## General anaesthetic project

The Victorian Branch of the ANZSPD and the Federal ANZSPD both supported a project to establish a dental general anaesthetic service in Cambodia in 2008. As a result, Cambodia now has a hospital GA service available to children who require it, including a good set of instruments and some supplies for extractions and minor oral surgery. Two anaesthetists, Dr So Saphy (Head of Anaesthesia at Kossamak Hospital in Phnom Penh) and Dr So Sareth (another anaesthetist at the same hospital) spent one week in NZ early in 2008 and were able to observe the treatment of children and special needs patients having dental treatment and oral surgery under general anaesthesia. The visit was particularly beneficial to Dr So Saphy as she teaches general anaesthesia and sedation at both dental schools.

Since the project started, the number of children attending the hospital for treatment under general anaesthesia has not been as high as expected, partly because there is a fear of general anaesthesia in Cambodia. Cost is also a factor, although treatment can be provided free for the poor. It is expected that as time goes on the demand will gradually increase and presently disabled children are being treated under GA every week. There is certainly a huge need - the mean dmft of preschoolers is nearly 10, and most children receive no dental care. A huge thank you to the ANZSPD (Federal and Victorian Branch) for supporting the introduction of this GA service in Cambodia. It has been greatly welcomed by the Cambodian dentists who see young and special needs children at the universities, hospitals and private clinics. We now have

a place where safe treatment under anaesthesia can be provided when the need arises.

## New project for disabled children

Recently a new project was started by the dental school at International University to provide preventive activities and dental treatment for about 150 severely disabled children at the government run Rabbit School in Phnom Penh. Initial assessments of the children showed high rates of decay, very poor oral hygiene, and large amounts of calculus in many mouths. Most children require extraction of teeth, and many require treatment under general anaesthesia. Fortunately this is now possible with the new GA service at Kossamak Hospital! A daily brushing program involving the caregivers has been started and restrictions on sugar consumption implemented, so things should improve with time. Some children are coming to the dental school for treatment by Dr Sonita Veng and myself, sometimes under sedation. It is hoped that other orphanages and organizations helping disabled children and adolescents will also be able to participate in the programme in the future if funds can be found.

## Cambodian society of dental sedation

In April this year the Cambodian Society of Dental Sedation was formed. The President is Dr So Saphy (former President of the Cambodian Society of Anaesthesiology), Vice President Dr Hong Someth (an Oral Surgeon who studied in NZ), Secretary Dr Callum Durward, and Treasurer Dr Antonia Moa. The founding members are

mainly dentists who have completed one of the Diploma of Pediatric Dentistry courses previously conducted by visiting Australian and NZ members of ANZSPD. Plans are underway to hold the first course in sedation later in the year.

## Paediatric dentistry conference

The Cambodian Society of Paediatric Dentistry (a member of IAPD) is discussing with the Cambodian Dental Association the possibility of holding Cambodia's first meeting devoted to paediatric dentistry in 2010. Members are very keen to improve the standard of care for children in the country, and a two-day conference could be a good way of helping achieve this goal. We are hoping to get some volunteer speakers from among the ANZSPD/AAPD membership - some of whom have already visited Cambodia to teach at the dental schools in recent years.

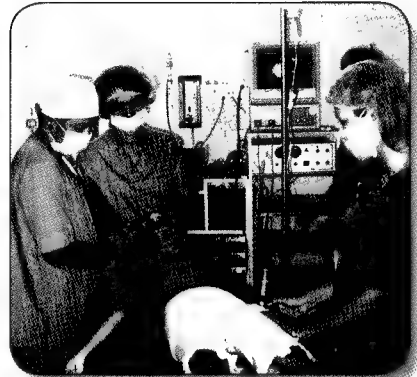
## Prison dental service

Although not specifically paediatric - the Prison Dental Service does see a few children. It was set up in 2008 to help the 12,000 prisoners in 26 prisons across Cambodia. In addition there are about 50 children living with their mothers in the prisons. The project was established with a grant from the German Embassy in Phnom Penh. Prior to this no dental services had ever been provided in Cambodian prisons, and prisoners were lucky if they got antibiotics and painkillers to help manage their dental infections. A team of mainly local dentists, dental students and dental assistants, go to the prisons every Saturday to provide treatment for the Cambodian and foreign prisoners. In addition, several one-week visits to

provincial prisons have already been made. Volunteer dentists from NZ and Australia have helped out over the past year. In March a team of 5 young dentists from Christchurch and Wellington hospitals came over and spent 2 weeks working in prisons in Pursat and Kamong Thom provinces, as well as doing some teaching at the university and helping in a clinic for orphan children. In the prisons they treated almost 450 patients, extracting 441 teeth and placing 139 restorations. You can read about their experiences in the April newsletter of the Cambodia Tooth Angel Project (CTAP) which has a link at the website: [www.cambodiaptoothangel.com](http://www.cambodiaptoothangel.com)

CTAP has been set up to help support some of the dental projects in Cambodia.

During their two weeks working in prisons, as well as extracting 441 teeth, they did many restorations, scaling and the occasional root canal treatment. Working in temperatures over 30 degrees each day, they achieved a huge amount under difficult conditions, and were warmly welcomed by the prisoners and guards alike. They were also able to provide treatment for the prison staff and their families, who live in near poverty as well. Future provincial trips are planned if funds can be raised, as it costs approximately \$US1500 for each trip. This amount covers the transport, accommodation and food (for a week), petrol for the generator, and dental supplies and medicines – for a team of about 10 people (dentists, dental students and dental assistants). If any ANZSPD dentists from NZ or Australia would like a challenge for a week or two they are welcome to come over and help!





# Federal Secretary-Manager's Report

Alistair Devlin,  
Secretary-Manager, ANZSPD Inc.

The Federal Council of the Society met at the time of the combined A.N.Z.S.P.D. - Australasian Academy of Paediatric Dentistry meeting on the day before the opening of the A.D.A. Congress in Perth in March. A number of important matters were covered:

## 1. The A.N.Z.S.P.D. Grant.

The 2005 I.A.P.D. Congress in Sydney realised a profit of just over AU\$100,000.00 for A.N.Z.S.P.D. This injection of funds boosted the already healthy coffers of the Society. The Society appointed a sub-committee to advise on what would be the best way to deal with this money. The Report of the sub-committee was received at the Council meeting and it was decided to adopt the scheme as advised by the sub-committee, to commence in 2010. This sees the establishment of The A.N.Z.S.P.D. Grant. The scheme will provide one grant each year to the value of AU\$2,000.00 which will be available to all full members of A.N.Z.S.P.D. The Grant would be available for:

- an oral health initiative in Australia or New Zealand which may be an educational resource or a broad community initiative.
- a community research project directly related to child oral health.
- support for an oral health project in Asia, Oceania or the Pacific which might be for materials, instruments, books for a school, etc.

Applications will be called for in the first edition of Synopses each year, with submissions to close 31st July of the same year. The Federal Council will judge the applications. Successful recipients would be expected to provide a report by the end of the year following the awarding of the Grant.

In effect, this scheme is a pilot program. If there is a lot of interest, the Federal Council did foreshadow that a more generous and extensive follow-up scheme would be introduced.

## 2. I.A.P.D. Individual Memberships.

Many members will be aware of this arrangement, whereby some of the provincial A.N.Z.S.P.D. branches offer our members the opportunity to become individual members of the International Association of Paediatric Dentistry. Among the principal advantages of such a membership were a subscription to the International Journal of Paediatric Dentistry [usually 6 editions a year] and the chance to enjoy a reduced registration cost for attendance at I.A.P.D. Congresses.

Unfortunately, a problem arose with the fact that I.A.P.D. has a financial year which runs from 1st January to 31st December each year, but where most A.N.Z.S.P.D. branches don't get their membership lists organised until about March or April each year. It meant our members weren't getting a full year out of their I.A.P.D. subscription, i.e. they would often miss the first two or three Journals.

As a consequence, the Federal Council decided to discontinue this scheme where A.N.Z.S.P.D. acts as a recruitment/membership agent for I.A.P.D.

However, members will still be able to become I.A.P.D. individual members by contacting I.A.P.D. directly. This is most easily done electronically, and subscriptions can be paid easily by credit card. It is just a matter of either going to the website [www.iapdworld.org](http://www.iapdworld.org) or by email contact to [IAPD@fdiworldental.org](mailto:IAPD@fdiworldental.org) For those of our members who are already I.A.P.D. individual members,

you can expect to receive an invitation to renew your membership towards the end of this year.

## 3. Essay Competitions

The Federal Council has decided to honour the considerable contribution to the teaching of paediatric dentistry at under-graduate and post-graduate levels in Australia and New Zealand by Emeritus Professor Louise Brearley Messer by naming the Annual A.N.Z.S.P.D. Under-graduate and A.N.Z.S.P.D. Post-graduate Essay Competitions after her.

This year the following topics have been chosen, firstly for the under-graduate competition:

"Provide an update and discuss the application of modern bonding systems in restorative dentistry, with particular reference to the implications in the restoration of primary teeth", whilst for the post-graduate competition: "Discuss the use and potential benefits of Mineral Trioxide Aggregate in paediatric dentistry".

The post-graduate competition carries a prize of AU\$2,000.00, whilst for the under-graduate competition, the prize is AU\$1,000.00. Essay entries close on 2nd November 2009.

## 4. 22nd I.A.P.D. Congress.

This Congress will be held in Munich, Germany 17-20th June 2009. A.N.Z.S.P.D. has been pleased to be able to nominate our own Dr Ed Alcaino of Sydney, N.S.W. for the position of President-Elect of the world body.

Normally, the Society is represented at these Congresses by our President. Unfortunately, Dr Nina Vasan won't be able to attend. The Society will be represented by Dr John Sheahan.

## THE VICTORIAN BRANCH...

The local committee continues to work hard to provide a useful and relevant society to its members. We are reintroducing the Paediatric Oral Health Small Grants program again, where individuals can apply for grants from \$500 to \$5000 for oral health related projects. Further information can be obtained elsewhere in this edition of Synopses.

Our first meeting on Saturday February 14 was very successful and had close to seventy attendees, hopefully indicating that our change in meeting format has been accepted by the membership.

Our second meeting (Manky Molars in Children) is coming up on Saturday 10th October, with Molar Incisor Hypomineralisation the topic for the day. This issue has become very topical recently and we have an array of expert speakers including Prof Mike Hubbard, Dr Sally Hibbert, Dr Felicity Crombie and Dr Sean O'Callaghan amongst others who will cover the aetiology, structure, clinical and orthodontic management of these teeth. The ANZSPD President Dr Nina Vasan will also speak during this day, with her topic "MIH management – the reality in private practice" - a great adjunct to our other speakers.

We believe this will be a high quality meeting with speakers from both the research and clinical areas, and hope as many people as possible will attend this meeting. For further information contact Loch Ramalingam: Loch.Ramalingam@rch.org.au or David Manton: djmanton@unimelb.edu.au.

Loch Ramalingam

## THE QUEENSLAND BRANCH...

continues to enjoy good numbers within its ranks. Our size ensures our meetings are educational, lively and a great social occasion.

The Queensland Branch Conference was held in February this year at Kingfisher Bay Resort on Fraser Island. Drs Dave Kenny and Mark Herzberg were the guest speakers. Delegates comprised a mix of ANZSPD members, non-members, and specialists from other fields. Fortunately, the international reputation of the speakers was sufficient to encourage delegates away from the world-heritage attractions such as the rainforest, crystal blue lakes, beaches and other natural attractions. The quality of the academic component of the conference was excellent and the leisure aspect was outstanding. A spectacular weekend was had by delegates and their families.

2009 looks like being a big year for the Queensland Branch. The commencement of the year saw a continuation of the current executive, some minor changes. Daniel Ford and Steven Kazoullis swapped roles (Daniel becoming Branch President and Steven, Branch Secretary/Treasurer). John Keys joined the committee as Branch Committee Member. Branch meetings for the remainder of the year will probe deeper into those peripheral areas of our clinical practice, including phobias, eating disorders and eye health. In addition to this, the branch will focus on how it can contribute to the future of the teaching of Paediatric Dentistry within The University of Queensland.

We look forward to a year of insight, contribution, good food and fellowship. As a branch, we are looking forward to the Queenstown meeting in 2010.

Daniel Ford

## THE NEW ZEALAND BRANCH...

has been busy this year organising the upcoming ANZSPD biannual conference in Queenstown March 28-30 2009. Katie Ayers and her team are finalising the programme and information and registration details will follow in the coming months.

In February we had the pleasure to host Professor Ramos-Gomez here in Wellington. We had a room packed full of dentists and dental therapists to hear all about the fantastic work that he and his group are doing for the high risk children and their caregivers in the US.

Plans are underway for our annual study day in Wellington on November 28th at the Mac Brewery. This day is open to all full members of ANZSPD and will include our NZ branch AGM. Some keen members have already booked their airlines tickets! We are hoping the weather will be better than it is right now!

Erin Mahoney



**AUSTRALIAN and NEW ZEALAND SOCIETY of PAEDIATRIC DENTISTRY Inc  
SA BRANCH**

**PRESIDENT**

Dr P Joe W Verco  
183 Tynte Street  
NORTH ADELAIDE SA 5006  
PH: (08) 8267 4081  
FX: (08) 8267 4976  
Email: [joverco@verco.com.au](mailto:joverco@verco.com.au)

**SECRETARY/TREASURER**

Dr Sue Springbett  
8 The Parade  
NORWOOD SA 5067  
PH: (08) 8362 0100  
FX: (08) 8362 0133  
Email: [info@childrensdentistry.com.au](mailto:info@childrensdentistry.com.au)

ANZSPD (SA Branch) is a study group including Specialist and General Practitioner Dentists with an interest in paediatric patients, their holistic treatment and administrative and political trends as they occur. This year we have a variety of dental topics and will touch on "Consent Issues", "Long Q-T Syndrome", the pre malignant "Hutchinson's Freckle" – our aim is to provide an expansive view of patient treatment. (Joe Verco).

**PROGRAMME OF DINNER MEETINGS 2009  
6.30PM**

<b>Tuesday 10 March</b>	Argentinian Bar and Grill 46 Port Road Hindmarsh PH: 8340 9331	<b>"Traumatic Day in Practice"</b> Dr Evelyn Yung <b>"Splinting"</b> Dr Michael Malandaris
<b>Tuesday 12 May</b>	House of Chow 82 Hutt Street Adelaide PH: 8223 6181	<b>"Early Childhood Caries-Space Management options – "Review"</b> Dr Joe Verco Panel discussion
<b>Tuesday 11 August</b>	Spice Kitchen 252 Kensington Road Leabrook PH: 8431 4288	<b>"Orthodontic – Paed. Dent. Interface"</b> Drs Steve Farrer/Marie Reichstein/Candy Mason.
<b>Tuesday 6 October</b>	Red Ochre Restaurant War Memorial Drive North Adelaide PH: 8211 8555	<b>"The Autistic Spectrum"</b> Dr Michael Malandaris <b>"The Long Q-T Syndrome"</b> Dr Joe Verco <b>"Special Needs in Public Health"</b> Dr Dean Hewlett

**REGISTRATION DETAILS**

**Remit to Dr Sue Springbett  
At above address**

State and Federal Membership	\$250 p.a.
New Graduates (1 <sup>st</sup> Year)	\$200 p.a.
Postgraduate and Undergraduate	\$150 p.a.
Guests per meeting	\$80
IAPD Membership (incl Journal of Paed. Dent)	\$100
Non Member ADA	\$280 p.a.

Total encl \_\_\_\_\_  
Cheques payable to ANZSPD (SA Branch) Inc.

NAME \_\_\_\_\_ QUALIFICATIONS \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_ P/CODE \_\_\_\_\_

PHONE \_\_\_\_\_ FAX \_\_\_\_\_ MOBILE \_\_\_\_\_ EMAIL \_\_\_\_\_

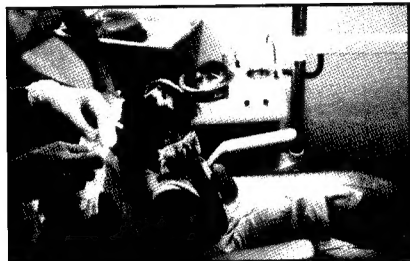
**It would be appreciated if members would confirm their attendance one week prior to meetings above.**



# Colgate Corner

by **Dr Barbara Shearer**  
Scientific Affairs Manager

barbara\_shearer@colpal.com



## Global Child Dental Health Taskforce

In the last Colgate Corner, I updated you on the achievements of the Global Child Dental Health Taskforce. One of the major activities of the Taskforce is to oversee Colgate's donation of 100,000 toothbrushes and tubes of toothpaste. While the majority of the donation is distributed via the states and territories dental public health systems, there are a small number of the tooth-brushing kits available for small scale oral health promotion activities which individuals or groups may wish to undertake.

The following information may be of use when considering whether your project would be eligible:

General principles that shape the criteria for selection of projects

- Resources need embedding in health promotion approaches rather than just used as one off handouts generating goodwill.
- Programs demonstrating alignment with the National Oral Health Plan and approaches cognizant of the social determinants of oral health will be favoured
- Programs should aim to improve



common risk factor approaches and be connected to broader approaches aimed at improving health

- Where there is competition for products, projects with the best planning for sustainable, efficient, and effective outcomes that will be selected
- There is an expectation that programs will report back to the GCDHT on the utilisation and effectiveness of the allocation
- This allocation is an opportunity to support smaller worthwhile programs that are initiated at community level and that may not have good support from elsewhere

## Criteria for Selection of Programs

In order to be eligible for product allocation under the GCDHT allocation, programs will be selected on their ability to meet the following criteria or a majority thereof;

1. Programs targeted at low income or socially disadvantaged communities

- and/or with poor access to oral care;
2. Programs should address the areas and/or recommendations in the National Oral Health plan (NOH plan);
3. Approaches to oral health promotion should be informed by the evidence for effectiveness where possible;
4. Programs should have developed approaches to sustainability;
5. Program evaluation should be planned and provided in an ongoing way as a requirement of support;
6. Agency collaborations and common risk factor approaches are encouraged to broaden the impact of the resources;
7. Programs that address only oral health should not be already funded from other sources.

If you have an oral health promotion project which fits the above criteria please contact Dr Barbara Shearer at [barbara\\_shearer@colpal.com](mailto:barbara_shearer@colpal.com) for an application form.

## Australian Dental Association Congress 12-15 March 2009

Congratulations on a most successful Pre-congress Course prior earlier in the year. Thank you also to Peter and Sylvia Gregory for their generous hospitality and the wonderful evening I spent with the ANZSPD members. It was a wonderful way to start the congress week.

**Colgate Territory Managers are here to assist you with the products you need in your surgeries**

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# Coming events

4 – 7 November 2009

Australasian Osseointegration  
Society 7th Biennial Conference

Gold Coast Convention and Exhibition  
Centre, Queensland, Australia

For further information, please contact the  
conference managers:

Phone: +61 7 3858 5525

Fax: +61 7 3858 5499

Email: [info@aosconference.com.au](mailto:info@aosconference.com.au)

Website: [www.aosconference.com.au](http://www.aosconference.com.au)

28-31 March 2010

16th Biennial Congress of ANZSPD  
Queenstown, New Zealand

27-31 May 2010

63rd AAPD Annual Session  
Chicago, Ill

11-13 June 2010

16th World Congress Dental  
Traumatology  
Verona, Italy

14-17 July 2010

88th IADR General Session  
and Exhibition  
Barcelona

26-29 May 2011

64th AAPD Annual Session  
New York, NY

Australia and New Zealand Society of Paediatric Dentistry  
[www.anzspd.org.au](http://www.anzspd.org.au)

Federal President

Dr Nina Vasan  
[nvasan@extra.co.nz](mailto:nvasan@extra.co.nz)

Federal Secretary  
Manager

Dr Alistair Devlin  
[devlins@inet.net.au](mailto:devlins@inet.net.au)

Branch Executives

Branch	President	Secretary	Fed Councillor
NSW	Dr Philippa Sawyer <a href="mailto:philippa.sawyer@toothdoctor.net.au">philippa.sawyer@toothdoctor.net.au</a>	Dr Suzanne Brent <a href="mailto:suzannebrent@yahoo.com.au">suzannebrent@yahoo.com.au</a>	Dr Kareen Mekertichian <a href="mailto:ksmek@bigpond.net.au">ksmek@bigpond.net.au</a>
QLD	Dr Steve Kazoullis <a href="mailto:steven@kazoullis.com">steven@kazoullis.com</a>	Daniel Ford <a href="mailto:ford@pdgdental.com.au">ford@pdgdental.com.au</a>	Dr John Rutar <a href="mailto:john.rutar@bigpond.com">john.rutar@bigpond.com</a>
SA	Dr PJW Verco	Dr Sue Springbett <a href="mailto:drsue@childrensdentistry.com.au">drsue@childrensdentistry.com.au</a>	Dr PJW Verco
VIC	Dr David Manton	Loch Ramalingam <a href="mailto:loch.ramalingam@rch.org.au">loch.ramalingam@rch.org.au</a>	Dr John Sheahan
WA	Dr Kate Dyson	Dr Alistair Devlin <a href="mailto:devlins@inet.net.au">devlins@inet.net.au</a>	Dr Tim Johnston
NZ	Dr Erin Mahoney	Craig Waterhouse <a href="mailto:craig.shona@extra.co.nz">craig.shona@extra.co.nz</a>	Dr Nina Vasan

Editor Synopses

Dr Dorothy Boyd  
[dorothy.boyd@phsouth.co.nz](mailto:dorothy.boyd@phsouth.co.nz)

Correspondence

Dorothy Boyd  
The Editor, Synopses  
57 Hanover Street  
PO Box 5144  
Dunedin, New Zealand

Printing and distribution

**Colgate**

Colgate Oral Care  
Level 15, 345 George Street  
Sydney NSW 2000 AUSTRALIA

Mailing List

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Submissions

All text for inclusion in Synopses must be submitted to the editor on floppy disk, zip disk, CD or by email. Both PC and MAC formats are accepted. Media will not be returned. Address email to [dorothy.boyd@phsouth.co.nz](mailto:dorothy.boyd@phsouth.co.nz). Please enclose your contact details and email address with all submissions.

Deadline next issue 15 September 2009